

REMARKS

The amendment to Claim 6 and new Claim 21 are supported on page 1, first line, to page 2, line 6, and page 2, line 32, to page 3, line 16, in Claim 5, and in the Abstract, first line to line 19. The paragraph inserted on page 4 between line 7 and line 8 has the same support as the amendment to Claim 6 and as new Claim 21.

Claims 6, 11, 13 to 15, 18 and 19 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicants traverse this rejection.

The Office Action stated that, in Claim 6, it is directed to at least one unsaturated oligophenol cyanate compound of the formula, a block oligomer; however, the claim also recites in the last three lines that it encompasses mixture of different compounds: namely, " and/or with those compounds of the formula in which n and m deviate from the above definitions by both being 1." Applicants disagree with this statement. The quoted claim language clearly indicates that Claim 6 includes the compounds of formula I, and mixtures of the compounds of formula I and other compounds defined by the stated difference from the compounds of formula I. Mixtures of compounds can be claimed under U.S. patent practice.

The Office Action stated: that, in other words, the claimed is directed to compounds of the formula I, but then specifically includes compounds not

covered by I as claimed; that, therefore, this is vague and indefinite; and that an appropriate correction is required. Applicants traverse this statement. Mixtures of compounds can be claimed. Claim 6 is not vague and indefinite because it clearly defines the non-formula I compounds in the mixtures along with the compounds of formula I. To make Claim 6 easier to read, applicants have made amendments to Claim 6 (that do not effect its scope).

The Office Action stated: that, in Claim 11, a phrase "other components of a lacquer" is written; that, however, this is vague and indefinite as to what "other components" could be present in the lacquer; and that appropriate correction is required. Applicant traverse this rejection. The C.A.F.C. in Hybritech Inc. v. Monoclonal Antibodies, Inc., 213 USPQ 81, (1986), stated:

"[a] patent need not teach, and preferably omits, what is well known in the art." [Page 94]

The types and components of lacquers are well-known to those skilled in the art and in the prior art. There are numerous English-language books, articles and other literature on lacquer in U.S. scientific and engineering libraries that readily provide such information. The "other components of a lacquer" are well-known so the claim is not indefinite and there is no requirement under Section 112 to insert "a laundry list" into Claim 6 under such circumstances.

The Office Action stated: that, in Claims 13 and 18, the term "as substrate" is written; that, however, this is vague and indefinite as to what kind of the substrate can be used in the process; and that an appropriate correction is

required. Applicants traverse this rejection. The types of substrates involved are well-known to those skilled in the art and in the prior art. U.S. Patent No.

4,713,442 (of record) states:

“Further, these prepolymers are useful in the production of coatings on such substrates as metals, cermics, glass and earthenware, and as impregnating lacqures of laminating resins.” [Emphasis supplied]

[Col. 9, lines 9 to 12]

Note that U.S. Patent No. 4,713,442 deals with polyaromatic cyanates from which the prepolymers are prepared. The term substrate applicants' claims is not vague and indefinite.

The Office Action stated: that, in Claims 14, 15 and 19, a phrase “other components of” is written; that, however, this is vague and indefinite as to what “other components” could be present in the varnish or the lithographic one or the solder resist; and that appropriate correction is required. Applicants traverse this statement. The components of varnishes, lithographic varnishes and solder resists are well-known to those skilled in the art and in the prior art. The involved terms varnishes, lithographic varnishes and solder resists by their very well-known definitions make the phrase “other components of” definite.

This rejection should be withdrawn.

Claims 6 to 13 have been rejected under 35 U.S.C. 102(b) as being clearly anticipated by Woo et al. '442 (U.S. Patent No. 4,713,442). Applicants traverse this rejection.

Woo et al. '442 does not anticipate any of applicant's claims. The unsaturated oligophenol cyanates of formula I of Claim 6 require that at least one B have an olefinic double bond and be present in certain type of tricyclic group or groups. Woo et al. '442 does not disclose any specific tricyclic aliphatic groups having an olefinic double bond, let alone either one required by applicant's claims. Woo et al. '442 is not an anticipatory reference. The two bicyclic aliphatic groups X and XI of Woo et al. '442 are not anticipatory.

Column 2, lines 36 to 39, of Woo et al. '442 states that its polycyclic aliphatic radicals contain two or more cyclic rings that may contain one or more double or triple bonds. This generic disclosure is not anticipatory of any of applicants' claims.

The Office Action stated: that Woo et al '442 discloses a preparation of polyaromatic cyanates esters by reacting suitable polyaromatic phenols with cyanogen chlorides in the presence of tertiary amine (see col. 4 lines 23 to 40); that, furthermore, the prepolymers are cyanate group containing polytriazines of liquid; these prepolymers may be converted to high molecular weight polytriazines by polymerization (see col. 9, lines 5 to 7); that, in addition, the prepolymers are useful in the production of coatings on such substrates as impregnating lacquers (see col. 9, lines 9 to 12); that, also, it is possible to impregnate fibrous fillers or reinforcing materials with the aromatic cyanates (see col. 10, lines 7 to 10); and that this is identical with the claims. Applicants traverse this statement. It appears that the Examiner did not correctly

read/analyze the claims. Woo et al '422 does not disclose any specific tricyclic aliphatic groups, including those required by applicants' claims.

This rejection should be withdrawn.

Claims 14 to 20 have been rejected under 35 U.S. C. 103(a) as being unpatentable over Woo et al '442 (U.S. Patent No. 4,713,442). Applicants traverse this statement.

Woo et al. '442 only discloses preparation of polytriazines (and prepolymers) using a catalyst. There is no disclosure in Woo et al. '422 that there is any exceptions to the requirement to use a catalyst, even for any starting polyaromatic cyanates having polycyclic aliphatic radicals containing one or more double or triple bonds.

Applicants' claimed unsaturated oligophenol cyanates have olefinic double bonds and they do not have to use any catalyst to achieve partial curing or crosslinking. Woo et al. '442 does not teach or suggest the problem disclosed by applicants or the solution of such problem disclosed by applicants. Woo et al. '442 directs away from applicants' claimed invention because Woo et al. '442 teaches the requirement of using a catalyst even with its starting polyaromatic cyanates having polycyclic aliphatic radicals containing one or more double or triple bonds. Accordingly, Woo et al. does not make applicant's claimed invention obvious.

The Office Action stated: that Woo et al. '442 discloses a preparation of polyaromatic cyanate esters by reacting suitable polyaromatic phenols with

cyanogen chlorides in the presence of a tertiary amine (see col. 4, lines 23 to 40); that, furthermore, the prepolymers are cyanate group containing polytriazines of liquid; these prepolymers may be converted to high molecular weight polytriazines by polymerization (see col. 9, lines 5 to 7); and that, in addition, the prepolymers are useful in the production of coatings on such substrates as impregnating lacquers (see col. 9, lines 9 to 12). Applicants traverse this statement as being an incomplete and incorrect description of the disclosure of Woo et al. '442 only discloses the requirements of the use of catalysts in preparation of the prepolymers and polytriazines.

The Office Action stated that, however, the instant invention differs from the reference in that the preparation of the radiation-curable varnish and the preparation of the radiation-curable solder resist for a circuit board are not specified. Applicants traverse this statement. Applicants disclose that no catalyst is required to prepare the prepolymers or triazines, unlike the disclosure of Woo et al. '442.

The Office Action stated: that, even so, the reference does teach broadly that the prepolymers are useful in the production of coatings including varnish and solder resists, on such substrates as impregnating lacquers or laminating resins (see col. 9, lines 9 to 12); and that, furthermore, the end products combined with reinforcing materials may be used in electrical engineering, in molding construction (see col. 10, lines 34 to 37). Applicants traverse this

statement. Woo et al. '442 only discloses the curing of its prepolymers using a catalyst. This is not required by applicants' invention.

The Office Action stated: that, therefore, it would have been obvious to the skilled artisan in the art to have motivation to prepare the radiation-curable varnish and the radiation-curable solder resist for the circuit board; and that this is because the reference does indicate that the polymerized polyaromatic cyanate esters can be employed to various applications including varnish, and solder resists for the circuit board. Applicants traverse this statement. Woo et al. '442 directs away from applicants' claimed invention. Note that the standard is one ordinarily skilled in the art.

This rejection should be withdrawn.

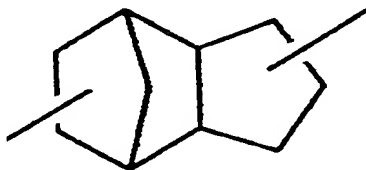
Claims 6 to 8 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentably over Claim 18 of U.S. Patent No. 5,932,762 (U.S. Patent '762). Applicants traverse this rejection.

Claims 18 of Patent '762 is a process claim for the preparation of compounds, whereas applicants' Claims 6 and 7 are for compounds/compound mixtures. The Examiner has not shown how such compound preparation process claim makes such compound claims obvious and patentably indistinct.

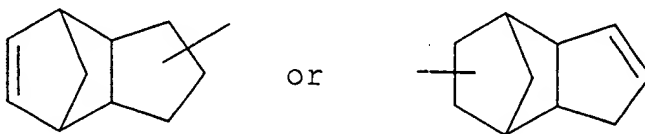
The Office Action stated: that, although the conflicting claims are not identical, they are not patentably distinct from each other because U.S. Patent No. 5,932,762 discloses the production of an aryl cyanate and the derivatives of the aryl cyanate compounds; and that, furthermore, the reference describes

expressly some of the claimed limitation such as “and/or with those compounds of the formula I in which n and m deviate from the above definitions by both being 1”. Applicants traverse this statement. The multivalent aryl cyanates of formula I of Patent ‘762 are not even generic to a portion of applicants’ oligophenol cyanates of formula I. Also, applicants’ claimed oligophenol cyanates are patentably distinct over the claims of Patent ‘762.

Patent ‘762, at column 7, lines 40 to 50, and in Example 4, discloses the production of an arylcyanate with the following bridging cycloaliphatic group:



Applicants’ production process prepares unsaturated oligophenol cyanates of formula I which have at least one of following cycloaliphatic groups:



Patent '762 does not disclose any cycloaliphatic group having any olefinic double bonds. Accordingly, applicants' production process Claim 8 lies outside of any claim of Patent '762, and is patentably distinct from the claims of Patent '762. Also the claims of Patent '762 do not suggest or make obvious any of applicants' claims.

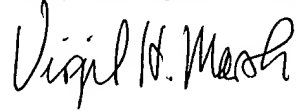
The Office Action stated that, however, the instant invention differs from the reference in that the claims have used different terminologies to describe the limitations of the invention. Applicants traverse this statement. The compounds in process Claim 18 in Patent '762 do not have any olefinic double bonds in their cycloaliphatic groups.

The Office Action stated that, even so, the core invention is the same regardless of using different terminologies to name the same kinds of compounds as claimed; furthermore, there is no patentable distinction between them. Applicants disagree with this statement. Obviousness double-patenting rejections only deal with claims, not disclosure. The core inventions are not the same. The compounds produced by Patent '792 are only present, used or produced in mixtures with applicants' claimed compounds (that are also used without the Patent '792 compounds). The burden of proof is on the Examiner and he has not carried his burden of proof.

This rejection should be withdrawn.

Reconsideration, reexamination and allowance of the claims are requested.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claim 6 has been replaced with the following revised version of Claim 6,
as amended:

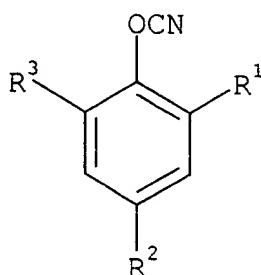
6. (Once Amended) An [At least one] unsaturated oligophenol cyanate [of
the formula] selected from the group consisting of:

(1) an unsaturated oligophenol cyanate of the formula:



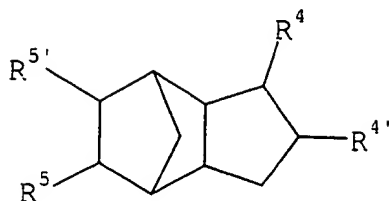
I

in which A is in each case a group of [the] formula:



III

and B is in each case a group of [the] formula:



IV

wherein R^1 , R^2 and R^3 each, independent of one another, are hydrogen or a bond to a group B with the proviso that each group A has either one or two bonds to group B; (i) R^4 and $R^{4'}$, and (ii) R^5 and $R^{5'}$ each, independent of one another, are either together a direct bond or are hydrogen and a bond to a group A, with the proviso that each group B has either one or two bonds to group A; the indices m and n are 0 or 1 and x is an integer from 0 to 10, with the proviso that at least one of the numbers m , n , and x is other than 0 and m and n are not both at the same time 1[,] ;[and mixtures thereof with one another and/or with those compounds of formula I in which n and m deviate from the above definitions by both being 1]

(II) a mixture of at least two unsaturated oligophenol cyanates of formula I; and

(III) a mixture of at least one unsaturated oligophenol cyanate of formula I and at least one compound of formula I in which n and m deviate from the above definitions by both being 1.

New Claim 21 has been inserted.

In the Specification:

The original paragraph on page 2, lines 21 to 25, has been replaced with the revised version of the paragraph on page 2, lines 21 to 25, as amended:

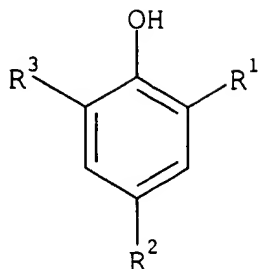
In accordance with the invention this object is achieved by the unsaturated oligophenol cyanates of the formula I [in accordance with Claim 1] of the invention. The molecule of these compounds has at least one olefinic double bond ($R^4-R^{4'}$ and/or $R^5-R^{5'}$ according to formula I) which permits free-radical addition polymerization.

Please substitute for the original paragraph on page 2, line 32, to page 3, line 16, for the revised version of the paragraph on page 2, line 32, to page 3, line 16, as amended:

The unsaturated oligophenol cyanates of the invention can be prepared by reacting an an oligophenol of the general formula:



in which A' is a group of the formula:



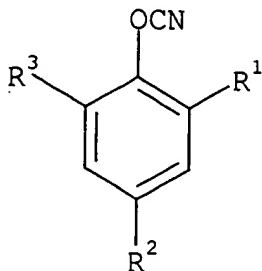
and B, R¹, R², R³, R⁴, R^{4'}, R⁵, R^{5'}, *m*, *n* and *x* are as defined [in Claim 1] above and elsewhere herein, is reacted with cyanogen chloride in the presence of a tertiary amine. Oligophenols of formula II are obtainable from Borden Chemical Inc. under the designations ESD-X1 to -X5, ESD-472C and ESD-473C. The compounds concerned here are condensation products of dicyclopentadiene (dimeric cyclopentadiene) and phenol, which are present as a mixture of isomeric and/or homologous compounds and also contain fractions of saturated compounds where *m* = *n* = 1.

Please insert the following paragraph on page 4 between line 7 and line 8:

By way of summary, the invention involves an unsaturated oligophenol cyanate of the formula:

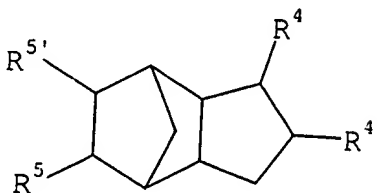


in which A is in each case a group of formula:



III

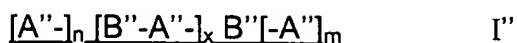
and B is in each case a group of formula:



IV

wherein R^1 , R^2 and R^3 each, independent of one another, are hydrogen or a bond to a group B with the proviso that each group A has either one or two bonds to group B; (i) R^4 and $R^{4'}$, and (ii) R^5 and $R^{5'}$ each, independent of one another, are either together a direct bond or are hydrogen and a bond to a group A, with the proviso that each group B has either one or two bonds to group A; the indices m and n are 0 or 1 and x is an integer from 0 to 10, with the proviso that at least

one of the numbers m , n , and x is other than 0 and m and n are not both at the same time 1; or a mixture of (a) at least two unsaturated oligophenol cyanates of formula I or (b) at least one unsaturated oligophenol cyanate of formula I and at least one unsaturated oligophenol cyanate of formula:



in which A'' is in each case a group of formula II and B'' in each case is a group of formula III, wherein R^1 , R^2 , and R^3 each, independent of one another, are hydrogen or a bond to a group B'' with the proviso that each group A'' has either one or two bonds to group B''; (i) R^4 and $R^{4'}$, and (ii) R^5 and $R^{5'}$ each, independent of one another, are either together a direct bond or are hydrogen and a bond to a group A'', with the proviso that each group B'' has either one or two bonds to group A''; the indices m and n are each 1 and x is an integer from 0 to 10.